May, 1953

THE CHEMIST

VOLUME XXX NUMBER 5

Dr. Arno C. Fieldner

Receives Washington Chapter Honor Scroll

(See page 231)

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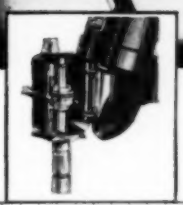

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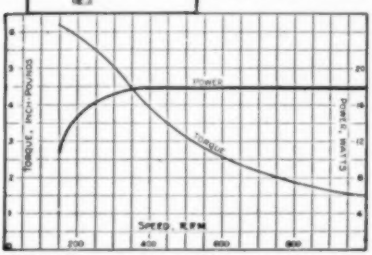

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Report on the Aston Affair

Dr. Lloyd Van Doren

Secretary, The American Institute of Chemists

THE AMERICAN INSTITUTE OF CHEMISTS was prompt and, we believe, effective in action on the Astin affair. President Work observed the depression caused by the incident among government chemists when he visited the Washington Chapter on April 7th, and he presented the situation to the National Council of the INSTITUTE on the following night. It was the feeling of Council that the following were the salient points:

1. That a challenge of integrity is a serious one needing more proof than had been offered.

2. That it would be wise for a committee of eminent scientists to review the Bureau's function, as proposed by Secretary Weeks.

3. That until this committee reported, there was no obvious basis to discharge Dr. Astin.

4. That Dr. Astin should have been granted a hearing by the Secretary.

5. That the eminent scientists on the Bureau's Visiting Committee should have been consulted.

6. That the President should investigate this with a committee appointed from the National Academy of Sciences.

In view of ineptness at Cabinet level, the Council felt that President Work should communicate with President Eisenhower. This he did under date of April 10th. The Council acted formally to refer further study of this case to a committee of which Dr. Crossley was appointed chairman. This committee was to report at the Council meeting on May 11th, with possible action by the Annual Meeting on the day following. The dates given above will establish the prompt action of the INSTITUTE. The formal steps taken by many of the scientific societies, largely since that time, have indicated the strength behind the view that the action was a serious error. The partial remedy already taken verifies this. We are indebted to many friends who have furnished information to insure a sound view and to the many members of the Institute who have inquired as to action in this case.

The Lost Line: On page 193, April issue of THE CHEMIST, in Dr. M. L. Crossley's article, the final line of type, at the end of the second column, was inadvertently dropped out. It reads, "were not research conscious." Please add it to your copy of the April CHEMIST.

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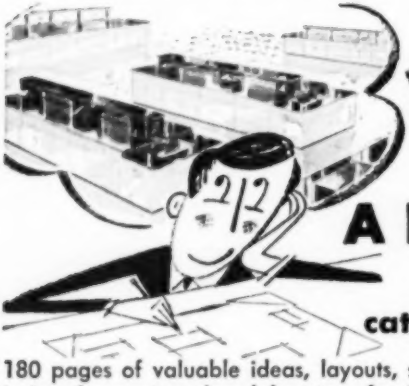

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Some Recollections of Gas and Fuels Chemistry Research in the Bureau of Mines

Dr. Arno C. Fieldner

Chief Fuels Technologist, Bureau of Mines, U. S. Department of the Interior, Washington, D. C.

(Remarks at the April 7, 1953 dinner of the Washington, D. C. Chapter of The American Institute of Chemists, acknowledging receipt of the Honor Award.)

I OFFER a few recollections of gas and fuels chemistry research in the Bureau of Mines and indicate their practical value as it appears to me at this time, after forty-six years in Government service. I feel that I am very fortunate to have lived in this Twentieth Century that has witnessed such a tremendous rise in the industrial applications of chemistry.

The accelerating pace in gas and fuels chemistry had begun at the turn of the century and went into high gear during the First World War.

The forerunner of the U. S. Bureau of Mines entered the field of fuel investigations in 1904, when the U. S. Geological Survey established a coal-testing plant at the Louisiana Purchase Exposition at St. Louis, Missouri, and started systematic studies of representative American coals. This work was moved to Pittsburgh, Pennsylvania, in 1908, and was transferred to the newly-created Bureau of Mines, in 1910.

The Bureau of Mines took a major part in the pioneering advances that were made in the early part of the present century. It provided unusual research opportunities in the days before the general establishment of industrial research laboratories, independent institutes, and university research foundations.

Members of the Bureau's staff were in the forefront of exploratory research. They could make a career for themselves within the Bureau's organization or go into industry or other newly established research agencies that needed them for key positions on their staffs.

The development of competent research scientists and engineers for the mineral industries has been one of the most useful functions of the Bureau of Mines. Throughout my career, I have had great satisfaction in noting the advancement of Bureau alumni to important research or administrative positions in other organizations.

Cooperative research with industry is a phase of Bureau of Mines work that appealed to me in the early days when only a few laboratories were available for such assistance. Our problems were broadly fundamental, and necessarily involved an important

public interest, such as conservation of the national resources or improvement of health and safety conditions in the mineral industries.

I will present the highlights of a few of the most interesting projects with which I have been associated.

Improvement of Fuel-Testing Methods

My first research paper[1] in the Bureau of Mines was published in 1910 in collaboration with Joseph D. Davis. It called attention to material differences in the results of volatile matter determinations in coal caused by variation of burner-flame temperatures.

This and other defects in the standard ACS methods of coal analysis, noted by analytical chemists, led to the appointment of a joint committee on coal analysis of the American Chemical Society and the American Society for Testing Materials under the chairmanship of Prof. William H. Noyes of the University of Illinois. I was appointed one of the ACS representatives on this committee. It was my first opportunity to meet and work with outstanding chemists of that day. Prof. Noyes, as some of you may remember, was the chairman of the first ACS Committee on Coal Analysis. Among the other members of the second committee were S. W. Parr, professor of industrial chemistry at the University of Illinois and the generally recognized dean of coal chemistry at that time; Alfred H. White, professor of chemical engineering at the University of Michigan, a leader in research pertaining to the coal gas industry; and W. H. Hillebrand, chief chemist of the Bureau of Standards, the foremost analytical chemist of the day.

Under the able chairmanship of of Prof. Noyes, this committee started active experimental work on improvement and extension of standard analytical methods. The Bureau of Mines Coal Analysis Laboratory took an active part in this work during the next decade and developed an electric-furnace method for determining volatile matter in coal and a standard method for determining the fusing temperature of coal ash. Soon after the First World War, the American Chemical Society withdrew from the joint committee, which continued as the committee on Coal and Coke of the American Society for Testing Materials. I was made chairman and held this position until 1948. In view of the Bureau of Mines deep interest in standard methods of coal analysis, research on analytical methods was considered part of its regular research program. This research was under the immediate direction of Walter A. Selvig at the Pittsburgh Station. He was the long-time secretary of the committee and, like all

[1] Fieldner, A. C., and Davis, J. D., Some Variations in the Official Method for the Determination of Volatile Matter in Coal: Jour. Ind. and Eng. Chem., vol. 2, 1910, pp. 304-308.

good secretaries, did the work while the chairman presided at committee meetings. After my resignation, Selvig became chairman and added to his laurels by winning international recognition for the ASTM system of classifying coals by rank. This was done in a series of conferences at Geneva. This continued operation of the Bureau of Mines with the American Society for Testing Materials has been of national and international benefit.

Gas-Mask Research

The entry of the United States into the First World War in 1917 opened up tremendous new fields of research for chemists. While the Congress was debating the proposed declaration of war, which was passed April 6, 1917, Van H. Manning, then Director of the Bureau of Mines, arranged a conference, on April 4, 1917, with General Kuhn, then President of the War College, to offer the Bureau's assistance in war-gas investigations. Mr. Manning telephoned me in Pittsburgh, on Saturday morning, and requested me to be in Washington on Monday morning, accompanied by George A. Burrell, former supervising chemist of the Bureau's gas investigations laboratory. We joined George S. Rice, chief mining engineer; Dr. Yandell Henderson, consulting physiologist, and W. E. Gibbs, developer of oxygen breathing apparatus, in Director Manning's office, on Monday morning and, according to plan, soon were on our way to the War College. Mr. Manning had a good sense of dramatic presentation. As soon as he had shaken hands with the general, he stepped back to introduce us and said, "General, here are the experts of the Bureau of Mines who have had wide experience in dealing with health and safety hazards from toxic and inflammable gases and dusts in the mining and metallurgical industries. I am sure that they can be of great assistance in the development of gas masks for protection of our troops. They and their laboratories are at your service during this emergency."

This was the beginning of the famous war-gas investigations of the Bureau of Mines that brought together a large part of the chemical faculties of the country's universities and chemists of industry, at the American University Station in Washington. This laboratory, under the direction of George A. Burrell, later became the Research Division of the Chemical Warfare Service.

Many of the promising young chemists in this organization achieved great distinction in the years that followed the war, for example, James Conant, who became President of Harvard University and now is High Commissioner to Germany; Robert E. Wilson, Chairman of the Board, Standard Oil Company of Indiana; Roger Adams, Chairman of the

Chemistry Department of the University of Illinois and a past president of the American Chemical Society, and many others.

The acquaintances that I made with the country's leading chemists and the army of young chemists, fresh from the university, were exceedingly helpful in building up a good research staff after the war. Many of the war-gas research developments suggested peacetime applications of gas masks and respirators that were followed up in Bureau of Mines laboratories.

Ventilation of Vehicular Tunnels

Bureau of Mines experience in underground ventilation problems, as well as in war-gas investigations, led to its being called on to undertake the pioneering research required for designing the ventilation system for the Holland Tunnels under the Hudson River. These were the first long tunnels proposed for automotive vehicular traffic where large volumes of exhaust gases had to be quickly removed to keep the carbon monoxide concentration of the tunnel atmosphere within safe limits.

Through analyses of exhaust gases and measurement of gasoline consumed in road tests of hundreds of automobiles and trucks, data were obtained for computing the amount of carbon monoxide that would be given off in tunnels. Experiments with human subjects indicated the maximum permissible concentration of carbon monoxide from the standpoint of health hazard. From these data the amount of ventilation for various traffic densities could be calculated. Tests on the best methods for admitting fresh air and exhausting contaminated air were worked out with the aid of an experimental model tunnel constructed in the Bureau's experimental coal mine at Bruceton, near Pittsburgh, Pennsylvania. Eight Fords ran around this underground oval simultaneously.

The ventilation design, based on these experiments, has proved successful in practice, and other tunnels have used the same ventilation system.

Health Hazards of Exhaust Gases from Gasoline Containing Tetraethyl Lead

From research on vehicular tunnel ventilation to a study of the health hazards of exhaust gases from gasoline containing tetraethyl lead was an easy transition. It was easy because William P. Yant joined the staff while we were on the tunnel ventilation problem and he, with the advice of Dr. R. R. Sayers, then Chief of the Health and Safety Division, built up a health laboratory staff, some of whose members were trained in biological chemistry, pharmacology, and pathology.

This problem involved development of new apparatus and methods for exposing test animals for long periods to accurately controlled and

analyzed concentrations of exhaust gases in air. Some of the animals in these tests were exposed over a period of 2 years. Among them were three generations of dogs, none of which suffered any apparent harm. The investigation indicated that no immediate or chronic increase in the public health hazard from automobile exhaust gases would be created by adding tetraethyl lead to the gasoline. Twenty-five years of experience in the use of leaded gasoline supports the conclusions from the research.

Warning Agents for Manufactured Gas

Another interesting investigation that stemmed from the Bureau's war-gas experience was a study of possible warning agents for manufactured gas. The American Gas Association asked the Bureau to make a comprehensive survey of substances that might be added to nonodorous fuel gases to impart to them an odor or irritating action, so that accidental escape of gases into rooms might be recognized and warn persons exposed to the gas. Hundreds of promising chemical substances were examined, and their sense-affecting properties measured. This included not only odor, but also irritant action on the eyes, nose, and throat.

Experiments showed that nose and throat irritants awakened sleeping persons, but odors did not. Croton aldehyde and allyl alcohol proved to be the most suitable materials that would awaken sleeping persons, and the mercaptans and the thiophenes were the most promising warning agents of the odor type. However, the cost of using the irritant type of warning agent was much greater than that of the odor-warning agent and the latter is the type that has been used in practice. Many cities now require the use of odor-warning agents in the public utility distribution of natural gas and liquefied petroleum gases. Many lives and much property have been saved by the general use of warning agents.

Gas-, Coke-, and Byproduct-making Properties of American Coals

One of the continuing functions of the Bureau of Mines, ever since it was established, has been the analysis and heating-value testing of American coals. These data have been published and are available to anyone interested in knowing about the composition of coals in relation to their use as fuels. However, coal analyses, by themselves, did not give enough information for assessing the coking value of specific coals. In 1926 the American Gas Association requested the Bureau of Mines to develop a test for determining the gas-, coke-, and byproduct-making properties of a coal and then use this test for surveying the carbonizing properties of typical American coals. This investigation was conducted with the financial and advisory assistance of the

Association. The tests were made on a sufficiently large scale to permit determination of the yields and quality of the coke, gas, light oil, tar, and other byproducts. The data thus obtained have been made generally available in a series of Bureau publications that have been especially valuable in recent years in developing additional supplies of coking coal for our greatly expanded steel industry.

Production of Synthetic Liquid Fuels from Coal, Lignite, and Oil Shale

The most recent of our interesting research programs is the production of synthetic liquid fuels from coal, lignite, and oil shale. We made some laboratory experiments on the catalytic synthesis of alcohols and hydrocarbons from carbon monoxide and hydrogen at our Pittsburgh Station in 1926 to 1930 and then dropped this work when the economy wave, following the great depression of 1929, struck the Bureau of Mines. You may be interested to know how we got back into synthetic liquid fuels research.

In 1935, when we were making our budget plans for 1936, the Director of the Bureau of Mines informed me that Secretary of the Interior Ickes had told the Bureau chiefs that the appropriation ceiling was going to be raised for the next fiscal year and that some new projects would be considered. I gave the Director a list of about a dozen new fuels projects set down in order of priority, according to my best judgment.

A few days later, the Director told me that Secretary Ickes had gone over the list and had selected "synthetic liquid fuels" to lead the list of coal research projects. This was my lowest priority project. The Congress approved a modest appropriation that the Bureau requested for surveying the amenability to hydrogenation of the various types of American coals, and Dr. Storch and his staff began their hydrogenation research program in 1937.

As we entered World War II, the Bureau was granted a small appropriation for laboratory research on the Fischer-Tropsch process and, in 1944, Congress passed an act authorizing the Bureau of Mines to conduct research and build demonstration plants for producing synthetic liquid fuels from coal and oil shale. Ample appropriations were provided. On the basis of laboratory research and information obtained from Germany after the war, semicommercial-scale plants for coal were designed and built at Louisiana, Missouri, and for oil shale at Rifle, Colorado. These are now in experimental operation and are being improved as new developments from laboratory research are being worked into the processes.

While the costs of producing liquid fuels from oil shale and coal are not yet competitive with those for petroleum fuels, further research on syn-

thetics, continuing increase in demand, and rising costs of finding and producing domestic petroleum will bring these costs together before many years have passed.

Aside from the main objective of synthetic liquid fuels, this work has greatly advanced our fundamental knowledge of the chemistry of catalytic reactions of carbon, oxygen, hydrogen, and their combinations; and also of the chemistry of solvent extraction, of hydrogenation, and of pyrolysis of coal and oil shale. It has added materially to our conception of the constitution of coal.

Approximately 500 papers have been published. The studies have a broad value in the chemistry of coal and oil shale; and to me they are the forefront of an expanding frontier of research in fuels technology.

The Expanding Frontier of Fuels Research

This brings up the questions:

1. What is the future of fuel technology?
2. Does it offer increasing opportunities to chemists and chemical engineers?

My answer to these questions is that the future of fuel technology is better than ever. Chemists and chemical engineers will continue to find a widening circle of new opportunities for research, development, and operation dealing with fuels and energy resources. I admit that much has been done in the past 50 years, but I am not like the commissioner of patents of more than a century ago who thought that the Patent Office could soon be discontinued because most everything had been invented.

Successful research pushes forward the frontier of new discovery. Wonders were accomplished following the First World War. But these seem small in the light of the tremendous advances of recent years.

In gas and fuels technology we have seen great improvements in the preparation and use of our common mineral fuels and now we are on the threshold of enormous possibilities of heat and power from atomic energy.

At the beginning of the century, old King Coal furnished most of the mineral fuels energy of the United States. (89% coal, 5% petroleum, 3% natural gas, 3% water power). But by 1925, his contribution had declined to 69 percent and by 1952 to 34 percent. Last year petroleum and natural gas together contributed about 62 percent of the nation's total domestic consumption of mineral fuels on an energy basis. (Petroleum 39 percent and natural gas 23 percent, water power 4 per cent.)

It seems that we Americans prefer to take our fuels in the liquid or gaseous form. We need great quantities of liquid fuels for transportation by land and sea and in the air; and we want the greater convenience of fluid fuels in heating our homes and offices. I think that this trend will

continue even though our reserves of liquid and gaseous fuels approach exhaustion much faster than those of coal.

The remedy for this situation is research and development and therein lies a growing field of activities for the chemist and chemical engineer. The Nation's vast reserves of solid fuels are adequate to supply energy needs for several hundred years. The problem is one of converting coal, lignite and oil shale to more suitable or more convenient forms of fuel, or of developing convenient automatic equipment for direct utilization of solid fuels.

The Bergius-I.G. coal-hydrogenation and the Fischer-Tropsch gas-synthesis processes have produced liquid fuels from coal on a commercial scale in Europe; and American research has adapted these processes to American conditions. However, more research is required to lower costs before they become competitive with present-day costs of petroleum products. Under favorable mining conditions such as those of western Colorado, shale oil probably can be produced almost as cheaply as petroleum. But here also some large-scale pilot-plant retorting should be done before a commercial plant is designed and built.

Research on the hydrogenation of coal and of carbon monoxide has helped to develop a fast-growing petrochemical and coal chemical industry in the United States. An American modification of the Fischer-Tropsch process is producing liquid fuels and aliphatic chemicals from natural gas on a commercial scale at Brownsville, Texas. Likewise, aromatic chemicals are being commercially produced in West Virginia by an American modification of coal hydrogenation. While the chemicals produced from coal, petroleum, and natural gas are only a few percent of the total fuel production, they comprise an important part of the chemical industry that will call for much future chemical research and development.

Most of you are familiar with coal and petroleum chemicals. You think of Perkin and coal tar dyes; Haber and synthetic ammonia; and Bergius and coal hydrogenation. But I wonder if you have ever considered coke as our most important coal chemical. As a commercial form of carbon it serves as a reducing agent for the production of 70 million tons of pig iron per year. This requires about 100 million tons of bituminous coal that has the property of making a strong coke that resists the crushing and grinding action of the blast furnace burden. Furthermore, these coking coals should be reasonably low in ash and sulphur to avoid increased costs and lower quality in the pig iron produced.

Most of the good coking coals of the United States are in the Appala-

chian Region and the cream of these coals has been skimmed. Industry already is taking steps to utilize coals of higher ash and sulfur content by developing better methods of washing out the impurities in the coal. An important field of research for the chemist is to develop a process for removing finely distributed sulfur in coal. Of equal importance is research on blending different coals before charging them into coke ovens so that our limited reserves of highly coking coals can be spread out in obtaining coke of adequate strength from our large reserves of poorly coking coals. There will be an increasing need for research as depletion proceeds of the Nation's limited resources of coking coals. These comprise only 25 percent of the total coal reserves.

Metallurgical coke is produced by carbonizing coal at temperatures of about a 1,000 degrees centigrade. Valuable byproducts of gas, light oil, tar, and ammonia are obtained. These have established themselves in commerce and have added to the financial returns of coke production.

However, it also is possible to carbonize coal at lower temperatures and obtain byproducts of different nature and higher yields. The extent of difference varies with the temperature; 500 to 600 degrees centigrade are the temperatures used in most low-temperature processes. Under these conditions the yields of liquid products are two to three times as much as obtained in high-temperature carbonization — in some cases as much as 35 gallons of tar per ton of coal carbonized. These tars are less cracked than high-temperature tars and with adequate research may prove to be excellent sources of coal chemicals in the tar-acid groups.

The new technique of low-temperature carbonization in fluidized beds is now being experimentally applied to lignite by the Bureau of Mines and to bituminous coal by the Pittsburgh Consolidation Coal Company. The process is promising for obtaining chemical byproducts on a considerable scale from coal in connection with its use in electric power stations. Therefore it is possible that the electric power industry will contribute materially to the chemicals of the future. Low-temperature tars contain large percentages of tar acids useful in the production of plastics. The lighter oils may be used for motor fuel directly and much of the remainder may be converted to motor fuel by hydrogenation.

When natural gas declines in production, a high B.t.u. gas will be needed to take its place. This also may be made from coal probably by complete gasification of pulverized coal in a fluidized bed or entrained in circulating gases. The high heating value may be obtained by catalytic methanation. Of course, all this will require much research and development. I am calling it to your atten-

—C&EN

Dr. Milton Harris, Washington Chapter Chairman, AIC President Work, and Dr. Fieldner.

tion to prove my point that there are more opportunities ahead of us than there were behind us.

As I look back over my service in the Bureau of Mines, I feel very thankful that I chose chemistry for my profession, and I never regretted entering the Government service. I have been happy in my work, and my associations have been most agreeable.

I enjoyed my 20 years at the Pittsburgh Experiment Station, where I was close to the actual research; and after I came to Washington I continued to keep in touch with enough Pittsburgh problems to relieve administrative tensions from time to time. I could not have done this without Bill Yant and Alden Emery. When I came to Washington in 1927, Bill continued in charge of Gas and Industrial Hygiene Investigations in Pittsburgh and later was placed in charge of the entire Station. Alden accompanied me to Washington and served as acting supervisor of the Experiments Stations Division, while I was absent riding the circuit of the Experiment Stations and keeping up my direct contact with coal research projects. I really had to get down to work on administrative details after they left the Bureau of Mines to join their present organizations.

In closing, THE AMERICAN INSTITUTE OF CHEMISTS has done much toward advancing public appreciation of the importance of our profession in our modern economy. As a chemist I feel indebted to the INSTITUTE and I greatly appreciate the honor Award of the Washington Chapter.

Fieldner as a Human Architect

Alden H. Emery, F.A.I.C.

Executive Secretary, American Chemical Society

(A condensation of an extemporaneous summary of Dr. Fieldner's career, presented before the Washington AIC Chapter when Dr. Fieldner received the Honor Scroll.)

ARNO Fieldner was born, went through the customary academic routine, and suffered through "graduation exercises" at appropriate intervals. Following completion of his study of chemical engineering at The Ohio State University in 1906, he had a short apprenticeship with the Denver Gas & Electric Company. The next year he became a fuels chemist in the U. S. Geological Survey. This work was transferred in 1910 to the newly created Bureau of Mines and Fieldner was included in the deal. Except for a period during World War I when Major Fieldner was in charge of the Gas Mask Section, Research Division, Chemical Warfare Service, he has been in technical administrative positions of gradually increasing importance in the Bureau of Mines ever since.

A real biography of Fieldner would fill more than the allotted time. His positions and the many honors conferred upon him are recorded in various places. The tremendous bibliography of his publications is readily available from the Bureau of Mines. Fieldner's reputation as a leading contributor to the chemistry of coal is firmly established. To present details here is wholly unnecessary.

Furthermore, I want to talk about a lesser known facet of this remarkable individual, his role as a guide to his subordinates and in influence on his associates. It is this aspect, rather than his scientific accomplishments, which I believe is honored in this award by the AIC.

Fieldner always has been astute in his selection of personnel at all levels of attainment, not excepting the most lowly positions. Here he wanted men with good personality and intellect, preferably ambitious, but deprived of opportunity for formal education. Once hired, he went to work on such people, especially the encouragement of their ambitions. Those employed as technicians soon were enrolled in night school and seldom did one stop short of his bachelor's degree; some went on for doctorates. Many of these men now hold positions of great responsibility and importance. Those with bachelor degrees and research promise were encouraged to enroll for graduate work.

This interest in helping those around him to better themselves was evidenced in other ways. When he found a misfit, he tried to steer him into a different line. In this Fieldner was successful in more than one case. He is known to have kept an offer for another job from being made because he thought the man wasn't ready to swing it or because the chance, while tempting, wasn't good enough *but*, and this is important, when the time was right or the chance the right one, the person got it.

Fieldner has encouraged his associates with ideas that had commercial possibilities to strike out for themselves. More than one respected and well known company today was established in this way.

In the exercise of this policy, Fieldner lost some good talent. But first and foremost to him has always been the desire to see a man happy in his work and making his maximum contribution to society. This it seems to me is a type of philosophy which THE AMERICAN INSTITUTE OF CHEMISTS recognizes as contributing to the professional side of chemistry and chemical engineering.

Presentation of the Honor Scroll to Dr. Fieldner

Dr. Arno C. Fieldner, chief fuels technologist, Bureau of Mines, U. S. Department of the Interior, Washington, D.C., was awarded the Honor Scroll of the Washington AIC Chapter, at a dinner distinguished by its warmth and friendliness, held at the Roger Smith Hotel, Washington, D.C., April 7, 1953.

Dr. William Yant, director of research, Mine Safety Appliances Company, Pittsburgh, Pa., who was identified by Dr. Fieldner as "my fishing companion for many years," spoke extemporaneously on "Fieldner, the Man." Dr. Alden Emery, secretary of the American Chemical Society, spoke extemporaneously on "Fieldner and His Professional Activities." A condensation of Dr. Emery's talk appears on page 241 of THE CHEMIST.

Dr. Fieldner in his acceptance address discussed some of the important highlights in research at the Bureau of Mines, as he evaluated them after forty-six years in government service. (See page 231).

The Honor Scroll was presented to him by AIC President Lincoln T. Work. It reads:

PRESENTATION

The Washington Chapter of The American Institute of Chemists

makes known to all men by this certificate that

Dr. Arno Carl Fieldner

U.S. Bureau of Mines

is presented with the

Honor Award for 1953

in recognition of

His outstanding contribution to Coal Technology

and

His untiring aid and encouragement to
the Younger Members of the Chemical Profession

In Testimony Whereof, we hereunto affix our signatures at Washington, D.C., this Seventh day of April, 1953.

MILTON HARRIS
Chairman, Washington Chapter

PAUL E. REICHARDT
Chairman, Honor Award Committee

WESLEY R. KOSTER
Secretary, Washington Chapter

Speaker: Dr. Gustav Egloff, Hon. AIC, who addressed the Texas Oil Jobbers Association, San Antonio, Texas, March 21st, on "Living off Petroleum." On March 25th, he spoke before the Western Petroleum Refiners Meeting, San Antonio, on "Petrochemicals Unlimited." On April 27th, he spoke before the Bond Club of Chicago, on "The Impact of Oil on our Civilization." On May 7th, the Indiana Section of the American Chemical Society, at Indianapolis, Ind., will hear him discuss "Catalysis in Petroleum Refining." He will attend the Mid-Year meeting of the Division of Refining, American Petroleum Institute, in New York, N. Y., May 11th to 14th. On May 18th he will speak at the meeting of the Chemical Specialties Manufacturers Association, Chicago, and on May 20th he will address the Tulsa, Okla., Section of the American Institute of Chemical Engineers.

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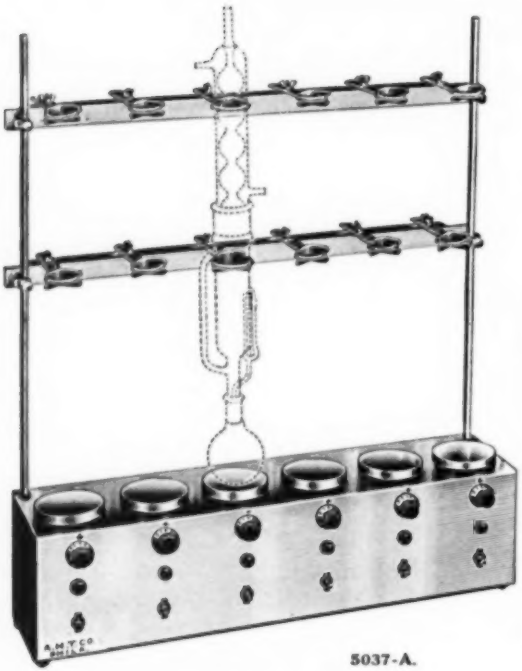

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How to Improve Your Status With Management

Dr. John T. Rettaliata

President, Illinois Institute of Technology, Chicago, Ill.

(An address delivered April 15, 1953, before the Chicago Chapter of The American Institute of Chemists, at the Chicago Engineers Club.)

ALTHOUGH I am not a chemist, my work brings me into daily contact with members of your fraternity who teach in the classrooms and work in the research laboratories at Illinois Institute of Technology and its associated organizations.

As chemists, you people represent a vital part of American technology, that outstanding development of the remarkable age we live in. Without you and your counterparts in other fields of science, we would not have the high standard of living we enjoy today, nor would we have been able to build up our military defenses as we have done.

Much of the credit for the unprecedented development of our technological potential should go to you who organize yourselves into societies like this one. Your meetings go far to sharpen your interests and develop your own capacities. But more important than that, they stimulate our whole economy.

I am sure, for instance, that your society had more than a little to do with the fact that plants producing chemicals and allied products in the Chicago area increased the value of their output by about 300 percent between 1939 and 1951. There are now nearly 700 such plants in our area, I am told, and they employ about 40,000 persons. Their products are key items in our technological economy — drugs and medicines, soaps, varnish, paint, fertilizer, perfumes and cosmetics, industrial chemicals.

In short, you are contributors to a growing and increasingly complex industrial community. Whether or not you are employed directly by industry, you have participated in its development and you will continue to do so simply because scientists and technologists have become indispensable to industry.

Yet your industrial role is not your only one. You also are members of the chemical profession, and as such, you have many interests and goals in common. THE AMERICAN INSTITUTE OF CHEMISTS is a potent force in helping you to attain your goals. You are to be congratulated on organizing sessions to discuss important topics like the one we are to attack today.

The problem of improving your status with management — our subject for today — is one of universal interest.

It interests you because you have the normal human desire to work smoothly and effectively with the management in your respective plants. More than that, it interests you because many of you will one day be members of that organizational echelon known as management. Certainly many of you have already made that transition.

At the outset, let me say that I am not going to suggest ways and means of hoodwinking management into believing you are worth more than you really are. I am not going to try to sell you a sure-fire formula for successful apple polishing.

In selecting this discussion topic, I am sure you had in mind far more important considerations than those.

The phrase "improving your status with management" I take to mean a general course of action based more on basic attitudes than on activities designed to make an impression. It includes, certainly, an understanding of your employer's business and the part you play in its operation. More than that, it includes an attempt to see his objectives and make them your own objectives, if you consider them worthy. I should add parenthetically that if you don't consider those objectives worthwhile, you probably should be looking for another job.

I believe we can agree that the role of management is to get things done through other people under its direction and guidance. To carry out this role, management requires certain kinds of knowledge and skills just as *you* do to carry out *your* jobs. Included in the broad areas of knowledge that serve as management tools are organization, controls, incentives, and so on. Success in management depends in good measure on the extent to which it can grasp and use these management tools.

Let me begin by saying that the tools of management differ considerably from the tools of chemists in that they are not nearly so well understood, even by the people who use them. The knowledge of how to manage is only now being developed and broadened.

Much research effort is going into this field right now, and we can expect great progress in our lifetimes. However, for the present I think it is very important for us to realize how many of management's practices are based on tradition and how few on scientific fact. If we understand this, our discussion this evening will make much more sense.

Executives on the whole are aware of these deficiencies in the area of management. Indeed, much of the current research on management is sponsored by managers who realize their blind spots and are frankly

seeking enlightenment.

Until a scientific basis for management is worked out, however, you must rely on common sense and time-tried methods for understanding your present management's requirements and adjusting yourselves to them. These methods have been talked about and written about by many different persons at many different times, so in discussing the matter probably will cover ground you have been over before. We might even present ideas at variance with your own. Nevertheless, there always is something to be gained by calling important details to mind again and mentally checking ourselves to see how we stack up.

To begin with, there are the personal attributes that give the first, and often the most lasting, impressions of you. Your general health is perhaps the most basic of these. Maintaining good health is a part of the service management expects of you because it contributes to reliability. More than that, it is the basic factor in presenting a good personal appearance.

You can't dress like a million dollars every day, and management doesn't expect you to. But you *can* be neat, clean, and orderly in whatever concerns your person. If a person is slovenly in appearance, it is often assumed that he is also slovenly in his work.

Almost as important is the pleasing effect of change in your costume. If you always wear the same blue suit, the same tie, and the same hat, you don't do justice to your personality. Change gives the impression of youthfulness, and youthfulness, at whatever age it shows itself, implies vigor and enthusiasm.

These things are elementary to you, I am sure. I only call them to your attention because, basic as they are, you must be constantly aware of them to some extent, or other attempts at improving your status with management are likely to fall pretty flat.

All right. Let's assume that you are reasonably careful of your health and appearance and possess the basic social graces in some degree at least. There are other essential qualities, and it is well to keep a checklist of them and to rate yourself from time to time. Better still, ask your laboratory associates, your daughter—even your wife, if you dare—what they like or dislike about you. This takes courage, but it may reveal deficiencies you wouldn't discover otherwise.

At the risk of omitting some important factors, I'm going to give you briefly just such a checklist:

1. *Do you know your calling?* The first requisite for success is a knowledge of the science and practice of your field. Your instructors in school and college did their best to impart their knowledge to you, but now it is your own responsibility to keep up with current developments.

2. *Can you deal with people?* Results are accomplished through the efforts of people working together. You must get the job done, but you must do it in such a way that good relations exist throughout your organization.

3. *Can you overcome adversity?* A professional career is not all clear sailing. How you react when things go wrong is sure to have a great deal to do with your success or failure.

4. *Are you adaptable?* We cannot create an environment to suit ourselves exactly, but we can adapt to the situations we find. Specifically, you should react positively when asked to assume responsibility, learn a new skill or specialty, or move to a new position or place.

5. *Do you have foresight?* The world needs and will reward men of vision and creative ability. Such men develop new products, new management methods, new business enterprises.

6. *Are you emotionally mature?* If you are, you can see human situations in their proper perspective, think objectively on human problems, and analyze yourself without being unduly critical. You will stand up for your ideas but realize that you cannot always have your own way.

7. *Can you be trusted?* Be careful before answering "yes" to this one. It involves more than counting all your golf strokes. Appreciation of professional ethics, loyalty to your company, and proper regard for confidential information are characteristics of a professional man, and they add up to integrity.

8. *Are you developing business judgment?* Ability to size up a situation and reach a reasonable conclusion is important to you and to your management. If you work in industry, you work in a business environment. Economic factors will influence most of your decisions, so appreciation of those factors is imperative.

9. *Can you express your thoughts?* Getting good ideas is only half of your creative responsibility. You must be able to sell them, and to do so you must be able to use language convincingly.

To this checklist each of you could add points of your own. The important thing, however, is to formulate a picture of what your management expects of you and develop yourself accordingly. What that amounts to, of course, is seeing yourselves as others see you. The picture may be appalling at times, but take a good look at it anyway and do it often. Perhaps it won't make a new man of you, but it certainly will improve the old one.

With our checklist of essential qualities in mind, we can proceed to a few basic rules of conduct on the job. Again, the list I am about to give you is fragmentary and incomplete. I give it only to suggest the existence of basic laws that cannot

be violated too often with impunity.

1. *When given a new position, apply your best efforts to your early assignments no matter how routine and trivial they may seem.* Don't worry unduly about whether your present job is a strategic stepping stone to a better job. Generally speaking, if you take care of your present assignment well, your future will take care of itself.

2. *Avoid the appearance of uncertainty.* Never state an opinion or start promoting an undertaking until you have obtained and studied the facts of the case.

3. *Don't be afraid to express yourself and present your ideas.* This is the logical follow-up of the preceding rule. Be sure of yourself, then make your ideas known.

4. *Before asking for approval of any major action, have a definite program worked out to support it.* Management usually refuses to approve any proposal if the practical details of carrying it out have not been thought through carefully and completely.

5. *Be extremely careful of the accuracy of your statements.* You never will achieve the confidence of management by habitually guessing when you don't know the answer. It is important to have the answers, but wrong ones are worse than none at all. If you don't know, say so, but be sure to add, "I'll find out."

6. *Keep your immediate superior informed of all significant developments.* This certainly can be overdone, but more often it is neglected. For every time your boss shouts "Don't trouble me with so many details," there probably are three times he groans, "Why, oh why, doesn't someone tell me these things."

7. *Never invade the operational domain of an associate or another division.* If you do, it is certain to be resented and can cause no end of trouble.

8. *When you are dissatisfied with the services of another section, make your complaint to the individual most directly responsible for the function involved.* Complaints made to a man's superiors, over his head, create much ill will and should be resorted to only when direct appeal fails. You won't enhance your reputation by making such complaints without giving the defendant a fair chance to correct the grievance.

9. *In dealing with outsiders, remember that you represent the company.* You may be only a new employee, but most outsiders will regard you as a legal, financial, and technical agent of your company. Don't make any commitments someone else will have to retract or make good on.

Observance of these rules will go far toward improving your status with management, for the simple reason that they are only variations of general rules of conduct that if adhered to will improve your relations

with anyone. The only reason for giving them any status as rules is that standards of considerate conduct are too easily forgotten if not formulated rather specifically.

As we progress in applying science to management, the rules should become easier to follow. In other fields, predictability of the results of certain actions increases in direct ratio to the amount of knowledge available in that field. The same will be true in the field of management.

I said earlier that not much progress has been made so far in reducing management to a science. There are indications, however, that this situation is about to change.

Recently, the magazine *Modern Industry* questioned a representative sampling of business executives, management consultants, and educational leaders to determine their impressions of current management-development programs.

The training of new men to assume executive responsibilities certainly is an important function of management. It is interesting to note that the survey showed very general dissatisfaction with present methods of accomplishing this function. It did, however, turn up the following suggestions of better things to come:

1. Tests of temperament and interest show signs of developing to the point where they will be much truer guides in selection of the right man for training.

2. There seems to be developing a technique for classifying industries into "types" of business that require "types" of management.

3. There is better understanding of the industrial psychologist and of his contributions. Wider and more effective use of this specialist will provide a more scientific way to assist men who are technically good but who are in need of confidential coaching in personality makeup and in handling people.

4. Many executives are coming to realize that organizational structure and operation in their businesses must be sound before men can be expected to grow. This corresponds to tilling the soil so seed can be sown.

5. More top men in companies are joining training programs and applying the things they learn to themselves. The National Training Laboratory in Group Development, for example, reports that substantial numbers of presidents, vice-presidents, and work managers have been attending its classes in the past three years. Previously, attendance was limited almost entirely to personnel directors and directors of company training programs.

So you see, your efforts to improve your status with management are only half the picture. The other half is that management is trying to improve its status with you. One of these days, you and management are going to be meeting halfway to an extent never

realized before.

But don't let that prospect cause you to become lax in your own efforts. You still must do your half, and your half will still be the responsibility of seeing that whatever you do in your job is done as competently, as carefully, and as intelligently as you know how. The more things change, the more that fact will hold.

The Right to Choose

Dr. Roger Adams, Hon. AIC

Head, Department of Chemistry, University of Illinois, Chicago, Ill.

(Contributed to the Panel Discussion held at a recent meeting of the Chicago AIC Chapter, sponsored by its Committee on Professional and Economic Status.)

UNIVERSITIES present as free a market for chemists as one could expect to find, with human nature being what it is. Admittedly, our problems are simpler than those of industry.

The man who has established a reputation through ten or fifteen years is bound to get offers. In many cases other institutions write and ask permision to offer him a job. We approve of this approach, urge our men to investigate all offers, but to reserve decision until we can consider a counter-offer. It reflects on an institution that tries to approach a man directly and keep negotiations secret. But the rumor that a man must get offers to advance is utterly untrue.

Some institutions and some companies consider only the Ph.D. a true chemist. But it's not entirely a dead-end street for the B.S. or younger and less well-known chemist. As long as they meet the requirements of lower echelon jobs, they can get ahead. So, a free market does exist in university circles — for the young chemist as well as his more renowned elders.

Many graduates are attracted more by industry than by teaching. When our advice is asked, we refrain from advising which concern to choose, but will discuss the pros and cons of large versus small concerns and similar questions.

We make it a habit to keep in touch with our graduates and advise those who have difficulties. Most institutions are not of the opinion that their obligations cease with the granting of the doctorate.

Some young men may be disillusioned after only six months on the job, may feel they made the wrong choice. Things can't be labeled right or wrong this soon. Leaving would be unfair to the present employer and might be questioned by a new em-

ployer. We usually advise, "Dig in, do the best you can, and if you still feel that way after a year — write us and we'll help initiate a change." One man who wanted to quit six months ago is now a supervisor. He was just blue, needed outside encouragement.

Some complain that their work doesn't make the best use of their training. If the job has been given a fair trial, this is best handled by the man's supervisor. Or perhaps the man can't get along with his supervisor, feels it handicaps advancement. There may be no real fault with either personality — they just don't mesh. Usually a change is the best solution in these cases. In any event, we only act as liaison in legitimate cases.

Men are recommended not only for technical knowledge, but also on their ability to get along with other people — both technical and management. This gives management a better chance to promote from within and the man has a better chance of advancement.

Some Factors in the Employment Market

Edgar B. Carter, F.A.I.C.

Formerly Executive Director of Research, Abbott Laboratories, North Chicago, Ill.

(Contributed to the Panel Discussion held at a recent meeting of the Chicago AIC Chapter, sponsored by its Committee on Professional and Economic Status.)

THERE are no gentlemen's agreements, hatched up by a bunch of vice-presidents in a smoke-filled room and signed in blood, against hiring chemists already employed by another firm. There may be a general feeling of respect in certain industries or geographical areas for the other fellow's problems, but this is engendered by social contacts between the executives of friendly competitors.

This respect is magnified by shortages of technical help, but is not a binding thing. The actions of some companies indicate they do not recognize it. And there are personnel shifts going on all the time that are far short of piracy. The employer has a right to refuse employment to a chemist if the man doesn't have the skills necessary or wouldn't be a good member of the team.

Many changes have been engendered by WSB restrictions on salaries of those currently employed, but leaving a loophole in regard to salaries of new men. Some men merely seek offers as a lever to get more money,

others as an evaluation of their own worth. But any man should be sure he's doing his best before he starts putting the pressure on — or he may be embarrassed by being asked when he wants to leave.

Hiring young men is no problem, but it's a different thing with the older and more experienced man. If he's given a top job — which he may well deserve — it can create resentment among faithful employees who have been looking ahead for just that chance. Rejection for this reason might be construed by the chemist-applicant as a policy against hiring men from competitive companies when such is actually not the case.

The Free Market for Chemists

Dr. R. C. Newton, F.A.I.C.

Vice President, Swift & Company, Union Stock Yards, Chicago 9, Ill.

(Contributed to the Panel Discussion held at a recent meeting of the Chicago AIC Chapter, sponsored by its Committee on Professional and Economic Status.)

MY VOTE goes for the "free market" for chemists. And I feel that the Golden Rule fits here in dealing with men. I think restrictive covenants constitute an unjust slavery contract.

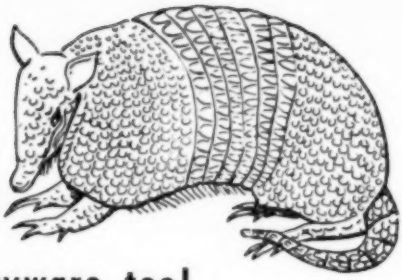
We've hired men who had worked for our adjoining competitor — yet I don't know who I'd rather work for if I wanted a job. Likewise, they've hired our ex-employees — in fact, one man worked for them first, then for us, then returned to them.

I don't feel there's any hiring done to get "secrets". A man can't blank his mind out, but it's all part of his training and experience. We expect loyalty from our men and hope that we give it in return.

We want them to discuss the prospects elsewhere with us so that we can tell them what their chances are here. If they still want a change, we don't hold it against them. We believe in letting a man know where he stands.

One of the best times to help a man become more effective is when you give him a raise. He'll be more receptive to criticism in this mood and will appreciate an evaluation of his good and bad points.

ruggedness



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Careers Ahead

THE Chapters of THE AMERICAN INSTITUTE OF CHEMISTS have awarded Student Medals this year to senior chemistry students in their areas, "in recognition of leadership, excellence in scholarship, and character." The students who received these awards are:

Chicago Chapter

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University of Notre Dame

David H. Anderson
Northwestern University

Robert L. Bertrand
Kansas State College

Wayne W. Bidstrup
Michigan College of Mining & Technology

Miss Dorothy Bump
Monmouth College

E. W. Cantrall
Purdue University

Ralph William Carl
The University of Missouri

Ralph Farrar
University of Wichita

Carl L. Hiltrop
Bradley University

John W. Johnson
University of Wichita

Robert C. Liu
Beloit College

Allan Ogard
St. Olaf College

John H. Schneider
University of Wisconsin

Donald Arthur Speer
University of Chicago

Robert John Steinpreis
University of South Dakota

Edward Otto Stejskal
University of Illinois

Alan N. Syverud
South Dakota State College

William J. Takei
Illinois Institute of Technology

William N. Turek
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Morton A. Chase
Whittier College

Cliffe David Joel
Pomona College

John James Keepch, Jr.
University of Redlands

Charles Auburn Schleiden
Los Angeles State College

George Henry Schmid
University of Southern California

Michael Sweeney
Loyola College of Los Angeles

Edward D. Titus
Occidental College

Student Medal Winners from the New York area receiving awards from Karl M. Herstein, New York Chapter Chaiman. Dr. Donald Othmer, F.A.I.C., and Dr. George L. Royer, F.A.I.C., speaker, are seated on each side of the standing persons, Miss Sommer and Mr. Herstein.

Mrs. Myra Maurice Willard
Immaculate Heart College

Robert Hemsley Wood
California Institute of Technology

New Jersey Chapter

Ronald Elliott Cape
Princeton University

Peter Joseph Wojtowicz
Rutgers University

New York Chapter

Alan F. Berndt
Cooper Union

William P. Cain
Fordham University

George Ciprios
Columbia University

Albert K. Fischer
New York University

Stanley Fried
Polytechnic Institute of Brooklyn

Philip E. Hixon
New York University

Robert E. Jones, Jr.
Columbia University

Richard R. Lloyd
Adelphi College

Carl E. Lorenz
New York University

James D. McClure
Polytechnic Institute of Brooklyn

Miss Marion Reiner
City College of New York

Stuart Alan Rice
Brooklyn College

Miss Shirley Rosenberg
Queens College

Jay F. Schonberger
City College of New York

Miss Elizabeth Sommer
Barnard College

Charles William Struck
Columbia University

Frank Joseph Witt
Polytechnic Institute of Brooklyn

Niagara Chapter

Edward A. Heintz
University of Buffalo

Richard A. Miller
Niagara University

Kevin R. Peterson
Canisius College

Ohio Chapter

Donald R. Campbell
University of Akron

A. J. Chadwell
University of Tennessee

Miss Miriam Derks
Kent State University

Robert Eugene Eberts
University of Dayton

John Richard Engel
University of Toledo

Martin Longmire
University of Cincinnati

Herbert I. Moss
University of Louisville

Robert A. Rightmire
Hiram College

Charles Weick
Mount Union College

Donald R. Whitman
Case Institute of Techonology

Eugene Dennis Wilhoit
Kentucky University

Horace E. Williams
Vanderbilt University

Charles F. Wissman
Western Reserve University

Pennsylvania Chapter

Alexander Kowalski
Philadelphia College of Pharmacy & Science

David P. Mayer
Haverford College

Edward J. Mc Nelis
Villanova College

John Joseph Melchiore
La Salle College

Barry Miller
Temple University

Frederick H. Owens
Ursinus College

Frank Van Loon Shallcross
University of Pennsylvania

Raymond H. Young, Jr.
Pennsylvania Military College

Washington, D.C. Chapter

Joel Selbin
The George Washington University

John Edward Herweh
University of Virginia

Brother Columban Conway
Catholic University of America

Miss Randi Veie Rosvoll
American University

THE AMERICAN INSTITUTE OF CHEMISTS wishes all of these young men and women success in their chosen careers. When the inevitable problems and questions confront them, which can be enlightened by experience, the officers and members of the AIC and its Chapters are always ready to make available to these young people the benefit of their counsel and observations.

Admitted: For listing and trading on the American Stock Exchange, the Cenco Corporation, Chicago, Ill. Its subsidiaries are Central Scientific Co., Chicago, and the Refinery Supply Co., Tulsa, Okla.

Contest: "Radioactivity Industrial Applications." First prize $100. Solution of industrial problem "must be arrived at by use of radioactive source and any instrument or circuit, which utilizes for detection a Geiger Counter Tube, an Integrator Tube or any similar device." Address inquiries to Anton Electronic Laboratories, Inc., 1226 Flushing Ave., Brooklyn 37, N. Y.

Foundation: Established by Rayonier, Inc., to provide charitable and educational contributions; including fellowships and scholarships at universities, particularly among those located in the Pacific Northwest and the Southeast where Rayonier cellulose manufacturing and timberland operations are largely concentrated. The Rayonier Foundation is a nonprofit corporation, organized in New York.

Essential: To the growth of the nation's chemical industry, the small chemical firms of the country, reports Robert L. Wilson, president of Wilson Organic Chemicals, Inc., Sayreville, N. J. Many ingredients needed by large plants are supplied by smaller companies. A production line for a short run can be set up quicker and be broken up without great difficulty by the smaller plant, and the flow of new developments calls for flexibility and adaptability, fields wherein the small chemical organizations excel.

COUNCIL

OFFICERS

President, Lincoln T. Work
President-elect, Donald B. Keyes
Secretary, Lloyd Van Doren
Treasurer, Frederick A. Hessel

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John R. Bowman, *At-Large*
Emmett B. Carmichael, *Alabama Chapter*
C. C. Concannon, *At-Large*
M. L. Crossley, *At-Large*
T. R. Donlan, *New Jersey Chapter*
Gustav Egloff, *Chicago Chapter*
L. H. Flett, *Past President*
Milton Harris, *Washington Chapter*
M. J. Hiler, *Ohio Chapter*
L. B. Hitchcock, *At-Large*
H. O. Kauffmann, *Niagara Chapter*
M. J. Kelley, *New York Chapter*
R. H. Kienle, *At-Large*
Harold A. Levey, *Louisiana Chapter*
John H. Nair, *At-Large*
H. A. Neville, *At-Large*
Donald Price, *At-Large*
M. Sittenfield, *Pennsylvania Chapter*
Foster D. Snell, *Past President*
Raymond Stevens, *New England Chapter*
Manuel Tubis, *Los Angeles Chapter*
Florence E. Wall, *At-Large*
Albin Warth, *Baltimore Chapter*

National Council Meeting

The next meeting of the National Council and the Board of Directors of the AIC will be held June 30, 1953, at The Chemists' Club, 52 East 41st Street, New York, N. Y., at 6:00 p.m. for the Council and at 5:00 p.m., for the Board of Directors.

April Meeting

The 288th meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held April 8, 1953, at 6:00 p.m., at The Chemists' Club, New York, N. Y. President L. T. Work presided. In the absence of the secretary, Dr. H. A. Neville was appointed secretary *pro-tem.*

The following officers and councilors were present: M. L. Crossley, T. R. Donlan, F. A. Hessel, D. B. Keyes, J. H. Nair, H. A. Neville, D. Price, F. D. Snell, L. T. Work. K. M. Herstein and V. F. Kimball were present.

President Work reported that he had attended the meeting of the Washington Chapter, when the Chapter's Honor Scroll was presented to Dr. Arno Fieldner — a meeting distinguished by its warm-hearted spirit.

The situation at the Bureau of Standards was discussed at some length. The following committee was appointed to recommend action to the next Council meeting: Dr. Crossley, chairman; Dr. Keyes, and Dr. Snell.

President Work announced that Rev. J. J. Pallace was appointed to represent

the INSTITUTE at ceremonies held by Manhattan College; and that Dr. Adalbert Farkas was appointed to represent the INSTITUTE at a meeting of the American Academy of Political and Social Sciences.

He announced that the Ohio Award would be made to Dr. Games Slayter on May first in Toledo. He reported that some seventy persons were present at the luncheon held by the Los Angeles Chapter for visiting AIC members, during the week of the ACS meetings in Los Angeles.

Dr. Neville reported that we now have 2495 active members. He announced with deep regret the deaths of the following members: Dr. Wilder D. Bancroft, Hon. AIC, on February 7, 1953; Frederick G. Manwaring, Charter member, on September 16, 1952; H. A. Johnston, F.A.I.C., on March 17, 1953; Dr. James R. Withrow, Hon. AIC, on March 20, 1953, and Dr. L. D. Vorce, F.A.I.C., on February 2, 1953.

The secretary was requested to ask the Ohio Chapter to prepare a resolution on the death of Dr. Withrow, recent member of the National Council.

A moment of silence was observed in honor of the deceased.

The secretary announced that a tally of the nomination ballots showed that the following persons would appear on the election ballot: Dr. Harry N. Holmes, Dr. H. L. Fisher, Dr. L. B. Hitchcock, Dr. Emil Ott, Dr. H. A. Neville, Dr. J. Bjorksten, and Dr. C. L. Thomas. Seven names will appear on the election ballot instead of six, because of a tie in nominating votes for the sixth place on the ballot.

Mr. Nair reported, as chairman of the Committee on Membership, that letters had been sent out to lists received from about half of the Chapters, and that the response had been excellent.

The report of the Committee on Constitution and By-laws, already distributed to Council members, was discussed and the councilors were invited to attend the next meeting of this committee.

The Committee on Honorary Membership presented its report, recommending three persons to receive Honorary Membership during the 1953-1954 season. Announcement of these names is scheduled to be made at the Honor Recipient's Luncheon on May 13th.

Dr. Keyes reported, as chairman of the Committee on Manpower. A bill is being introduced by Representative Johnson and a duplicate by Representative Flanders, and the Council was asked to support this bill. The secretary will send copies of this bill to the councilors.

Mr. Donlan reported that the New Jersey Chapter is planning several projects for future activities.

Mr. Herstein reported that the New York Chapter had held an unusually successful student meeting at which awards were made to students in the New York area and at which Dr. George L. Royer spoke. The Chapter's Council is inviting ten members to each of its meetings to show them the operation of Chapter's governing body. On May 21st the Chapter's Honor Scroll will be presented to Dr. Herman Mark, preceded by a reception to be given by E. I. du Pont de Nemours & Company.

The following new members were elected:

FELLOWS

Blair, James S.
Chemist, Research Department, American Can Company, 11th Avenue and St. Charles Road, Maywood, Ill.

Childs, Elbart Barth
Group Leader, Socony-Vacuum Oil Co., Inc., Brooklyn 22, N. Y.

Gill, Louis M.
General Manager, Atlas Powder Company, Darco Department, 60 East 42nd Street, New York 17, N. Y.

Herbert, William Stanley
Technical Director, Ray-O-Vac Company, 212 East Washington Avenue, Madison, Wis.

Margolis, Asher Jacob
Chemical Engineer, Simoniz Company, 2100 Indiana Avenue, Chicago 16, Ill.

McLoud, Elbert S.
Basic Research Director, S. C. Johnson & Son, Inc., Racine, Wis.

Parker, Milton E.
Director and Professor of Food Engineering, Illinois Institute of Technology, Chicago 16, Ill.

Reed, Rufus D.
Chairman, Science Department, State of New Jersey Board of Education, Upper Montclair, N. J.

Rollins, Thomas J.
General Manager, Keldon Research Corporation, Box 2555, Terminal Annex, Los Angeles 54, Calif.

MEMBERS

Benca, Otto Karl
Owner, Custom Chemical Labs., 2054 North Cicero Avenue, Chicago 39, Ill.

Miller, Raymond O.
Chief Control Chemist, Celon Company, Muscatine, Iowa.

Pappas, Harry J.
Bacteriologist, The Griffith Labs., Inc., 1415 West 37th Street, Chicago 9, Ill.

ASSOCIATES

Houlihan, William Francis, Jr.
Chemist, Research, Heatbath Corporation, Front Street, Indian Orchard, Massachusetts.

Leven, Martin R.
Chemist, Ditto Inc., Harrison & Oakley, Chicago, Ill.

Russell, Robert John Joseph
Chemist, Pratt & Whitney Aircraft, (Division of United Aircraft), East Hartford, Conn.

Simms, Albert E.
Chemist, Herstein Labs., Inc., 66 Beaver Street, New York 5, N. Y.

RAISED FROM FELLOW TO LIFE

Work, Lincoln T.
Consultant, Room 1760, 420 Lexington Avenue, New York 17, N. Y.

RAISED FROM MEMBER TO FELLOW

Moore, Richard L.
Assistant to President, Foster D. Snell, Inc., 29 West 15th Street, New York 11, N. Y.

West, Charles Peter
Executive Chemist, Centro Research Institute, Croton Dam Road, Ossining, N. Y.

AIC Activities

C. P. Neidig, F.A.I.C.

Baltimore Chapter

Chairman, Maurice Siegel
Vice Chairman, Dr. Norris Matthews
Secretary-Treasurer, J. Bernard Edmonds
Representative to National Council, Dr. Albin H. Warth
Reporter to The Chemist, Ralph W. Lamenzo

Medicinal Chemicals

The Baltimore Chapter held its Spring Meeting at Loyola College, April 23rd. Chairman Maurice Siegel introduced the speaker, Dr. Francis Whitacre of the Mathieson Chemical Corporation.

Dr. Whitacre spoke on "Medicinal Chemicals", a topic which covered the various classifications, their uses and volume of sales.

In reference to the sales volume of drugs in 1952, Dr. Whitacre pointed out the staggering sum of $2,395,000,000 for that year.

Generally, before any drug can be marketed, a considerable amount of research is required. For a definite disease, the research must supply the answers as to whether the drug in question effects a cure or merely acts as a palliative. Further research points out whether the source of supply is natural or synthetic. Finally, biological work supplies the answers to toxicity and dosage.

When all this extensive preliminary work has been completed, the Food and Drug Administration is given a resume of the drug, by the company seeking a permit

to market the item. When the permit is granted, highly trained men are then necessary to introduce and promote sales of the drug. The most important obstacle for them, of course, is professional acceptance. Once acceptance in that circle is obtained, production sales soar.

Anti-histamines, sulfa drugs and penicillin are good examples of specialized drugs that reach tremendous productive and sales volume.

Dr. Whitacre terminated his talk by showing a series of slides on anesthetics, their chemical composition, and their effectiveness on humans.

—RALPH W. LAMENZO

Los Angeles Chapter

Chairman, T. F. Bewley
Vice Chairman, Peter Stupin
Treasurer, Don Remer
Corresponding Secretary, Blanche Simons
Representative to National Council, Manuel Tubis

May Meeting

The Los Angeles Chapter will meet, May 27th, at the Eleda Restaurant, 4296 Crenshaw Blvd., Los Angeles, Calif. Student medals will be presented to outstanding senior students at the local colleges and universities. Dr. Roger Truesdail, F.A.I.C., who has just returned from an extensive tour of Europe, will report on conditions in Europe under the general title, "Commercial Research Laboratories in America and in Europe."

New York Chapter

Chairman, Karl M. Herstein
Vice Chairman, S. F. Coneybear
Secretary-Treasurer, Richard L. Moore
Representative to National Council, Dr. Maurice J. Kelley

Dr. Mark Honored

Dr. Herman Mark, F.A.I.C., head of the Division of Polymer Chemistry, Polytechnic Institute of Brooklyn, will receive the 1953 Honor Scroll of the New York Chapter of the AIC, at the Chapter's annual meeting in the Hotel Commodore, May 21st, Karl M. Herstein, F.A.I.C., chapter chairman, announced recently.

The citation to Dr. Mark reads: "As scholar and humanitarian, teacher and expositor, scientist and researcher, you have given lavishly to young and old throughout the world. Beloved by students and colleagues, your adopted country proudly acclaims you for the distinction you have brought."

Dr. Emil Ott, F.A.I.C., director of research of Hercules Powder Company, Wilmington, Delaware, will be the principal speaker.

The award will be presented at a dinner meeting, preceded by a reception given by E. I. du Pont de Nemours and Company. Open to all, the meeting is expected to be the largest on the New York Chapter's agenda for 1953.

Will You Come?

May 1, 1953. Ohio Chapter. Annual Meeting, Toledo, Ohio. Morning: Plant trip to Owens-Illinois Glass Co. Afternoon: Business meeting, Dura Glass Center of Owens-Illinois Glass Co. Evening: Ohio Award Dinner, Hillcrest Hotel. The award will be presented to Dr. Games Slayter, F.A.I.C.

May 5, 1953. New Jersey Chapter. Military Park Hotel, Newark, N. J. Honor Scroll to Dr. August Merz.

May 7, 1953. Pennsylvania Chapter. Dr. Sidney D. Kirkpatrick, editorial director, *Chemical Engineering,* will speak on "The Rocky Road of the Chemical Profession." At this meeting Student Medals will be awarded.

May 8, 1953. Chicago Chapter, Engineers Club, 314 S. Federal, Chicago, Ill. Cocktails 6:00, Dinner 6:30; Meeting 7:30. Subject: "The Value of Better Human Relations in Industry. Speakers: Dr. Leo K. Bishop, vice president and regional director of N.C.C.J. Mr. Russell Babcock, chairman, Illinois State Commission on Human Relations. Discussion Leader: Dr. William I. Harber, Research & Development Corp.

May 12-13, 1953. Annual Meeting of The American Institute of Chemists. Benjamin Franklin Hotel, Philadelphia, Pa. Presentation of A.I.C. Gold Medal to Dr. J. C. Warner, president of Carnegie Institute of Technology.

May 21, 1953. New York Chapter. Hotel Commodore, New York, N. Y., Presentation of Honor Scroll to Dr. Herman F. Mark, F.A.I.C., of Polytechnic Institute of Brooklyn. Reception courtesy of E. I. du Pont de Nemours & Co., 6:00 p.m. Dinner 7:00 p.m. Speaker, Dr. Emil Ott, F.A.I.C., of Hercules Powder Company.

May 27, 1953. Los Angeles Chapter. Eleda Restaurant, Los Angeles, Calif. Presentation of Student Medals. Speaker, Dr. Roger Truesdail, F.A.I.C., "Commercial Research Laboratories in America and in Europe."

Opportunities

Doris Eager, M.A.I.C.

Positions Available

Chemist: Experienced in soaps, waxes and detergents.

Chemist: Experienced in sludge dispersal compounds; fuel oil treatments. Box 51, THE CHEMIST.

Chemists: Male or female. College graduates. Some experience in the food field or soaps and detergents. Box 53, THE CHEMIST.

General Manager: Small chemical manufacturing company in North Central State. Experienced in pharmaceutical manufacturing industry and the organic chemical field. Also administrative experience. Age 40-50. Approximately $25,000. Box 55, THE CHEMIST.

Woman Chemist: Strong background in writing and chemistry. For statistical and market research. Position in Philadelphia. Box 57, THE CHEMIST.

Chemical Engineer-Economic Analyst: Chemical engineer able to guide commercial evaluation studies of new products, processes and applications of existing products in organic field. Extensive background in chemical costs required, plus information on accounting, finance, market research, statistics. Salary $15,000.

Development Engineer - Organic Chemist: Background of petroleum chemistry. M.S. or Ph.D. degree or equivalent. Experience should include commercial experience in sales, product development or market research. $15,000.

Development Engineer-High Polymer: Chemist or chemical engineer, well-grounded in high polymer and plastic technology preferably in vinyls. M.S. or Ph.D. degree or equivalent. At least five years experience should include commercial experience in sales, product development or market research. $15,000.

Location Eastern seaboard. Travel including attendance at professional meetings. For the above three positions, reply to Box 59, THE CHEMIST.

Chemists Available

Purchasing Agent: 2-years' experience buying all types chemical plant equipment with engineering-construction concern; 2-years' marketing-production experience. Graduate work business administration, organic chemistry. Box 52, THE CHEMIST.

Organic Chemist: Ph.D. 1945, F.A.I.C. Training and experience in organic medicinals and pharmaceuticals including formulation work from laboratory through full-scale production. Interested only in positions of responsibility. Age 33, family. Box 54, THE CHEMIST.

Laboratory or Group Leader: Ph.D. Physical chemistry. Ten years research and development — ceramics, minerals, pigments, including some administrative experience. Surface chemistry, microscopy, and high-temperature reactons. Technical writing, literature surveys, research planning. Member professional societies. Several publications. Box 50, THE CHEMIST.

Chemist: 34, family, experienced; batteries; plating, textile; glues; gelatines; gen. physical, chemical commercial testing — seeks research or managerial position in control, Atlantic coast. Box 56, THE CHEMIST.

For Your Library

Wood Chemistry

Second Edition, edited by Louis E. Wise and Edwin C. Jahn. Contributors: F. E. Brauns, Harry P. Brown, B. L. Browning, M. A. Buchanan, W. G. Campbell, Holger Erdtman, Carl C. Forsaith, A. W. Goos, William M. Harlow, E. E. Harris, George C. Harris, L. F. Hawley, W. F. Holzer, I. H. Isenberg, Edwin C. Jahn, Ervin F. Kurth, H. Mark, Clifford B. Purves, Alfred J. Stamm, C. J. West, Louis E. Wise, F. H. Yorston. Vol. 1. 688 — *XXXII pp. Vol.* 2, pp. 691-1943. *American Chemical Society Monograph Series, Reinhold Publishing Corp.* 1952. $15.00 *per volume.*

This important handbook appeared in first edition in 1944, edited by Louis E. Wise, with 860 pages of text and 40 of index. The new edition has about fifty per cent more text pages. The subject index for Vol. I, 32 pages, is incorporated with the index of the entire work in Vol. II, on 64 pages. The organization of the vast material is fundamentally the same as before. The former Part VI, "Wood as an industrial raw material" is now Part V, "Industrial Wood Chemistry" and now precedes "The Chemical analysis of wood." The chapter on biological decomposition has acquired the rank of "Part", so that there are now seven parts.

The great care in preparing the new edition is manifest not only in the manner in which the results of new work have been integrated with parts of the previous text, but also in the new chapters which have been added, and in a complete change in the arrangement of the references which are now placed where they do the most good, at the foot of the page.

Vol. I starts with the anatomy, physiology, and physics of wood and ends with a physico-chemical characterization of genera of trees. In between, the components of the cell wall and the "extraneous" substances, oils, resins, tannins, and others, are discussed. Vol. II begins with the detailed description of "surface properties of cellulosic materials", followed by almost 250 pages on industrial wood chemistry, the new part on biological decomposition, and seven chapters on the chemical analysis of wood.

In all, this is an outstanding modern work on the chemistry of wood. The few instances of overlapping in the presentation are unavoidable and, in fact, not altogether undesirable since they contribute to the completeness of the picture as seen through the different temperaments of the authors. In many chapters, the material contained in the literature is not only systematically reported, but judiciously compared and criticized. The progress made since the time of the first edition of this book is clearly visible, although in certain fields much remains to be done.

—DR. EDUARD FARBER, F.A.I.C.

Organic Chemistry

Second Edition. By Louis E. Fieser and Mary Fieser. Trade Edition. Reinhold Publishing Co. 1125 *pp.* 6" x 9½". $10.00.

This book is up-to-date, a reference work without redundancy; precise and complete. It is the product of intensive organic laboratory research, with forthright and concise descriptions, an excellent work.

—Dr. John A. Steffens, F.A.I.C.

Textbook of Organic Chemistry

By Georges Holmes Richter. Third Edition. John Wiley & Sons, Inc., 762 pp. 9¼" x 6". $6.75.

This is a fairly comprehensive textbook, rather advanced and thorough, covering the multiple extension of organic chemistry in a systematic manner.

Chemical Books Abroad

RUDOLPH SEIDEN, F.A.I.C.

Cambridge University Press, Cambridge (New York 22, N. Y.): *Lipid Metabolism,* by R. T. Williams; 1952, 102 pp.; paper covers, $2.75.—These are the proceedings of a symposium held by the Biochemical Society in London on February 16, 1952. Its 8 lectures (and discussions) covered the following subjects: absorption of dietary lipids; fat synthesis from acetate (*per se* or derived from glucose); enzyme oxidation of fatty acids; deficiencies of essential unsaturated acids and of pyridoxine.

Franckh'sche Verlagshandlung, Stuttgart: *Chemie Lexikon, Vol I: A-K,* by Hermann Roempp; 3rd ed., 1032 pp. DM 96.—Here is one of the most complete and concise encyclopedias. It covers all recent scientific and technical developments of chemicals of all types, including their properties, main sources of supply, and uses in various industries and research laboratories. The scope of this 2-volume work also includes chemical and other scientific terms, equipment, the biographies of hundreds of chemists, information about leading chemical firms of the world, thousands of literature references, etc. Print, paper, and binding of the book are as excellent as its articles and its (relatively few) illustrations. It's a major reference work.

Vandenhoeck & Rupprecht, Goettingen: *Grundriss der technischen Chemie, Vol. IV: Technische Brennstoffchemie;* 1952, 227 pp. (17 ill.); paper covers, DM 18.80.—This outline of the chemical industry, announced in the March, 1952, issue of The Chemist, is slower in coming off the press than was anticipated; 4 of its 7 parts are still to be released. The latest volume is a treatise on technical fuel chemistry, covering the nature, improvement (by physical and chemical means), and transformation (through cracking, degasifying, gasification, hydrogenation, etc.) of fuels, particularly of coal, tar, and oil.

Georg Thieme Verlag, Stuttgart-O: *Praktische Arbeitsphysiologie,* by Gunther Lehmann; 1953, 355 pp. (145 ill.); DM 33.—Convinced that manpower is the most important and most valuable production factor, the author proves that it is necessary to adjust work and working conditions to the workers' needs so as to make it possible for them to produce most efficiently. Rest periods, working position, rational tool construction, climatic conditions, air composition, light, noise, vibration, and diet are only a few factors which are considered in this important new book. It will help physicians as well as engineers and plant executives to better understand the modern theories and accepted practices of occupational physiology.

Verlag Chemie, Weinheim-Bergstrasse: *Kolorimetrische Analyse,* by Bruno Lange; 4th ed., 395 pp. (105 ill.); DM 23.80.—American and French editions of this

practical book on colorimetry were published a few years ago. It describes in detail the theories and the various types of colorimeters used for analytical work in inorganic and organic chemistry, the many possibilities for its use in physical chemistry, medicine, biology, food chemistry, and for pH determination. Among the 400 detailed working methods given (with 1,000 literature references) are those of Li, Na, K, Ca, Be, Mg, B, Al, Cr, Fe, Co, Ni, Mn, Zn, Cu, Cd, Pb, Sn, Hg, Ag, Au, Pt, Rh, Ir, Pd, Ti, Wo, V, U, Mo, Ce, F, Cl, I, S, NO_3, NO_2, NH_3, C, CO, CO_2, O, Si, P, As, Sb, alcohols, acetone, benzol, phenol, organic N, chlorophyll, creatinine, oils, fats, and of dozens of chemicals formed normally or pathologically in blood and urine. This is truly a book of utmost value to the modern analytical chemist in college and industry.

Something New

"Flowsheets From Operating Plants Throughout The World." Bulletin. Denver Equipment Co., 1400 17th St., Denver 2, Colo.

"New Alumaloy Desiccator." Information. Laboratory Industries, Inc., 4710 West North Ave., Chicago 39, Ill.

"New Metallographic Polisher." Information. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"Utility Warmer Plate." Information. Labline, Inc., 217 N. Desplaines St., Chicago 6, Ill.

"Surface Treatment Of Metals With Peroxygen Compounds." Becco Bulletin #39. Becco Sales Corp., Buffalo 7, N. Y.

"Lustrex, Water-Soluble, Modified Polymer Plastic Resins." Information. Plastics Div., Monsanto Chemical Co., Springfield, Mass.

"Saf-I-Weld." A new fiber glass welding helmet. Information. United States Safety Service Co., 1215 McGee St., Kansas City, Mo.

"Odors and Fumes." (Brochure on Air Pollution.) Microchemical Research Institute, 44-27 Douglaston Parkway, Douglaston, New York.

"Controlled Vat Dyeing." Calco Technical Bulletin No. 828. American Cyanamid Co., Calco Chemical Div., Bound Brook, N. J.

"Corning Glassmaker." Vol. 1, No. 1. Publication of Corning Glass Works, Corning, N. Y.

"Catalog Supplement for March 1953." The Emil Greiner Co., 20-26 North Moore St., New York 13, N. Y.

"New Form of Toxaphene Insecticide." Information. Hercules Powder Co., Wilmington, Del.

"Cenco Supervac OD-25 Oil Diffusion Pump." Bulletin No. 12. Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.

"Handyman's Guide to Home Wood Preservation." Booklet. The Dow Chemical Co. Dept. P.E.N., Midland, Mich.

"New magnesium barrel Skid." Information. Magline Inc., Mercer St., Pinconning, Mich.

"Rotostir" — a new stirring device. Information. Central Scientific Co., 1700 Irving Park Rd., Chicago 13, Ill.

"Alpha-Chloroacetamide as catalyst for Urea Formaldehyde." Bulletin. Chemical Development Corp., Danvers, Mass.

"Mark-On" tape. For labeling glass containers. Information. The TapeMark Co., 321 Cedar St., St. Paul, Minn.

"New Chemical Proportioning Pumps," Bulletin 4061. American Instrument Co., Inc., Silver Springs, Maryland.

"A Few Facts About Dehumidification For Industry." Bulletin. Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica, N. Y.

"Air Pollution Abatement Manual." Manual Sheet P-13. $0.50. Manufacturing Chemists Association, Inc., 246 Woodward Bldg., Washington 5, D. C.

"Chemonomics." Publication. R.S. Aries & Associates, 400 Madison Ave., New York 17, N. Y.

"Permanent Magnetic Hopper." Information. Eriez Mfg. Co., Erie, Pa.

"Ultra-Aire Space Filter." Bulletin No. 1505-1. Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh 8, Pa.

"Laboratory and ASTM Thermometers." Catalog A-53. Brooklyn Thermometer Co., 217-09 Merrick Blvd., Springfield Gardens, N. Y.

"Elec-Detec, Portable Audio-Video Instruments." Brochure. Anco Instrument Div., American Name Plate and Mfg. Co., 4254 W. Arthington St., Chicago 24, Ill.

"Non-Electric Grate Magnet." Information. Eriez Manufacturing Co., Erie, Pa.

"Combination Automatic and Manual Control Valve, Models 1520 SMW and 1560 SMW." Information. The Annin Co., 3500 Union Pacific Ave., Los Angeles 23, Calif.

"Denver Equipment in Every Field." Bulletin G3-B39. Denver Equipment Co., 1400 17th St., Denver, Colo.

"Precision Mercalyzer." Bulletin T-11131. Precision Scientific Co., 3737 W. Cortland St., Chicago 47, Ill.

"Colmonoy Spraywelder and Sprayweld Process." Bulletin. Wall Colmonoy Corp., 19345 John R. St., Detroit 3, Mich.

Sponsored Industrial Research

Contest: For industrial firms that have landscaped their properties within the past three years. Awards: Engraved certificates "in recognition of superb achievement in industrial landscaping and beautification thus contributing to employee and civic pride in our American heritage." Request folder from Dr. Richard P. White, Executive Secretary, American Association of Nurserymen, 635 Southern Building, Washington 5, D. C.

Opened: In Milan, Italy, in February, the new National Museum of Science and Technics, featuring an Exhibition on the Science and Technique of Leonardo da Vinci, in celebration of the fifth centenary of his birth.

To be Reprinted: *The Analyst*, Vol. I (1876) to Vol. 76 (1951), published for the Society of Public Analysts and other Analytical Chemists, by W. Heffer & Sons, Ltd., Petty Cury, Cambridge, England.

Condensates

Ed. F. Degering, F.A.I.C.

Buckman Labs., Inc.

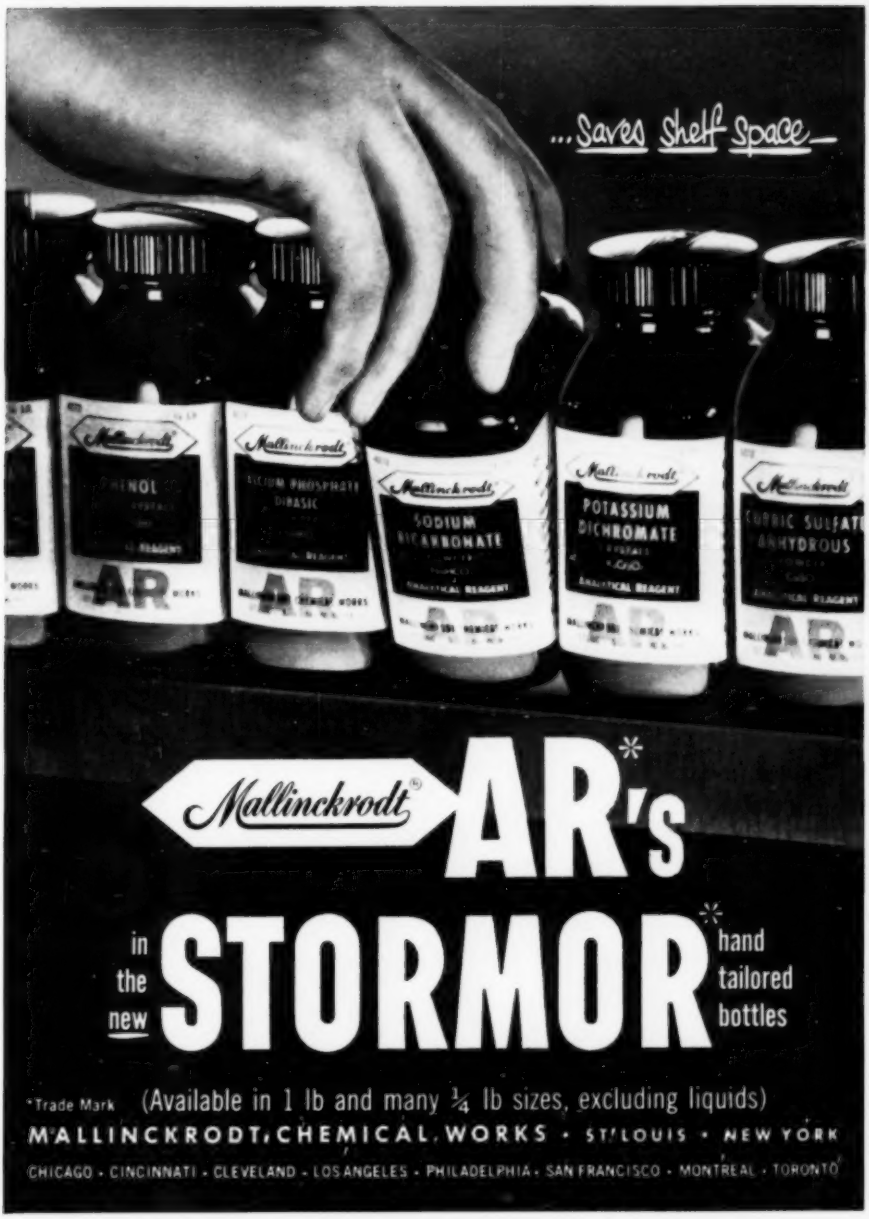
New chemicals for flameproofing cotton, a blood plasma extender, powdered orange juice, plasticizers from inedible animal fats, and a good leather produced from domestic materials, are among the accomplishments described in the Bureau of Agricultural and Industrial Chemistry's report for the fiscal year 1952, released by the U. S. Department of Agriculture.

Daraprim (pyrimethamine) an antimalaria drug said to be more powerful than any yet known, was reported recently by U. S. Public Health Service scientists at a recent meeting of the American Society of Tropical Medicine and Hygiene held at Galveston, Texas.

Today, a backward country is no longer as dependent as formerly upon the skills and education of its own citizens. It can buy automatic or semi-automatic plants and machinery abroad — and a few highly trained control engineers can then produce enough to raise the entire country's standard of living.

Microwaves are being used to measure the amount of smoke in air. Under an Army Chemical Corps grant, Prof. H. C. Thacher, Jr., of Indiana University, has adapted a machine which pipes the ultra-high-frequency radio waves into two test chambers. One chamber is filled with pure air, and the other contains air with traces of smoke.

Close to 53,0000,000 motor vehicles were in use during 1952. This figure breaks down as follows: Approximately 43,249,362 passenger cars; about 9,086,780 trucks and buses; some 630,000 unregistered vehicles owned by Federal, State, and Local Governments.



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